IOLINE™

User Guide

IOLINE 300/350HF SYSTEM

User Notice

Trademarks
Ioline is a trademark of Ioline Corporation. Other product names, logos, designs, titles, words or phrases mentioned within this publication may be trademarks, service marks, or trade names of Ioline Corporation or other entities and may be registered in certain jurisdictions including internationally.

Ioline Disclaimer
IOLINE CORPORATION PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR CONDITIONS OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL IOLINE, ITS DIRECTORS, OFFICERS, EMPLOYEES OR AGENTS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OR DATA, INTERRUPTION OF BUSINESS AND THE LIKE), EVEN IF IOLINE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES ARISING FROM ANY DEFECT OR ERROR IN THIS MANUAL OR PRODUCT.

Limit of Liability Statement
It is the responsibility of the operator of the cutter to monitor the performance of the cutter and maintain it in proper working condition by following the instructions in this ***Quick Start Guide*** and the ***300 / 350HF System User Guide***. It is the responsibility of the operator of the cutter to follow all safety precautions and warnings that are described in this ***User Guide***. Ioline Corporation is not responsible for injuries that may occur as a result of unsafe use. Ioline Corporation is not responsible for substandard operational performance as a result of failure to maintain the cutter as described in ***Quick Start Guide*** and the ***300 / 350HF System User Guide***.

© 2003-2006 Ioline Corporation. All rights reserved. This manual may not be copied, photocopied, reproduced, translated, transmitted or converted to any electronic or machine-readable form in whole or in part without prior written approval of Ioline Corporation.

Service and Support
If you require assistance with an Ioline product, your local Ioline dealer or authorized service center is ready to help. Support information is also available 24/7 on the Ioline Web site—or you may contact Ioline directly:

Ioline Corporation
14140 NE 200th Street
Woodinville, Washington 98072 U.S.A.

Ioline Customer Service Department
Monday through Friday
7:00 A.M. - 5:00 P.M. U.S. Pacific Time
Voice: 1.425.398.8282
Fax: 1.425.398.8383
techsupport@ioline.com
www.ioline.com

Part Number: (File) 107084 Rev. 7

IOLINE 300/350HF SYSTEM

User Guide

Images & Illustrations

Figure 1. Front view of the 300 System xvi
Figure 2. 300 / 350HF System rear view (tray removed) xvii
Figure 3. 300 / 350HF System bottom view (bottom cover removed) xvii
Figure 4. 300 / 350HF System top view xvii
Figure 5. 300 / 350HF System (right view with cover removed) xviii
Figure 6. 300 / 350HF System (left view with cover removed) xviii
Figure 7. Logic board xviii
Figure 8. Tray & table assembly xix
Figure 9. Carriage assembly (with blade holder installed) xix
Figure 10. Carriage assembly (rear view) xix
Figure 12. Rear panel assembly xx
Figure 11. Blade holder assembly xx
Figure 13. The cutter keypad 25
Figure 14. Origin point 26
Figure 15. Control Center Setup Screen 28
Figure 16. Control Center Main Menu 28
Figure 17. File Menu 31
Figure 18. Setup Menu 31

Figure 19. Display Menu 32
Figure 20. Options Menu..... 33
Figure 21. Options Menu: Calibration 34
Figure 22. Options Menu: Test..... 34
Figure 23. Help Menu..... 35
Figure 24. Installing the blade and blade foot 38
Figure 25. Blade holder in the carriage jaw 39
Figure 26. When the blade is properly exposed, it lightly scores the backing 39
Figure 27. Suggested settings by material type 42
Figure 28. 301 Software Main Window 43
Figure 29. 301 Design Setup Window 44
Figure 30. Cleaning the traverse extrusion..... 49
Figure 31. A clean blade holder and the blade after cutting several sheets of twill 50
Figure 32. Right side (black Philips head) cover screws 51
Figure 33. Left side (black Philips head) cover screws 51
Figure 34. Removing the right cover 51
Figure 35. Turn the cutter over and support the tray with the right side cover 52

Table of Contents

Safety & Cautions

Visual Reference Guide

Chapter 1 Overview

Getting Started **21**

Chapter 2 Assembly & Setup

300 / 350HF System Assembly **23**
- Unpack the Cutter 23

Install Software & Manuals **23**

Connect the cutter to the Computer **23**

Chapter 3 Cutter Functions

Keypad Controls **25**
- Arrow Keys 26
- Set Origin 26
- Speed 26
- Force 26
- Test Cut 27
- Repeat 27

The Ioline Control Center **28**
- Changing System Settings 28
- Screen Menu Options 29
- Blade Steering Arc 30
- File 31
- Setup 31
- Display 32
- Options 33
- Install New Firmware version 33
- Calibration 34

Test **34**
- Help 35

Chapter 4 Cutting

Cutting Material **37**
- Loading the Material 37

Installing a Blade and the Blade Foot 38
Installing a Blade Holder or Pen 38
Adjusting Blade Exposure and Force 39
Sending a Cut/Plot File to the Cutter 40
Pause Cutting 41
Suggested Settings 42
Speed & Force 42
Advanced Cutting **43**
Kiss-cutting: a time-saver 43
Prepare to Cut 43
Send first cut file 43
Send second cut file 45
Communication Testing **46**
Communication Test 46
Testing for a Faulty Cutter Serial Port 46
Testing for a Faulty Computer Serial Port **47**

CHAPTER 5 **Repair and Maintenance**
Cleaning the Traverse Extrusion and Carriage Wheels **49**
Cleaning the Blade Holder **50**
General Disassembly Procedures **50**
Removing the End Covers 50
Removing the Bottom Cover for Internal Access 52
Troubleshooting **53**
Common Problems 53
Error Messages 54
Control Center Software Errors 54
301 Software Errors 54
L.E.D Codes 55
Service & Support **57**
Getting Help **57**

CHAPTER 6 **End Notes**
Customer Service **58**
Your Comments Are Requested **58**
Before you contact Support… **59**
The FCC Wants You to Know **60**
Booklet 60

GLOSSARY

INDEX

This page intentionally left blank.

Safety & Cautions

Please read these safety guidelines before beginning operation of the Ioline 300/350HF Cutter. The cutter uses a very sharp blade when cutting. The parts can move quickly. Always observe the following safety precautions:

- Keep your body away from the front of the cutter. The tray moves freely in this space while the cutter is in operation. Position the back of the cutter at least 9-inches away from any wall or objects to permit free movement of the tray.
- Do not try to repair the machine without factory authorization. Only qualified service personnel should attempt any disassembly or access to internal components. If external mechanical adjustments are necessary, turn off the cutter and disconnect it from all power sources (both the computer and the wall outlet).
- Be careful with hair, jewelry, or loose clothing near the machine to prevent them from becoming caught in the mechanical parts.
- Never move the carriage (the part that carries the blade holder) or the tray, by hand while the power is on. Use the Arrow keys.
- Keep hands away from the carriage when the cutter is in operation.
- Use caution when changing a blade in the blade holder. See ***Installing a Blade & Blade foot*** for the recommended procedure.
- Take extreme care when handling the blades. They are sharp and could cause injury if mishandled. Although the blades are made of a hard material, they are brittle and can break if dropped or mishandled.

KEY

A	Left end cover	**H**	Origin (starting point)
B	Dust cover	**I**	Thumb nuts (2)
C	Carriage (design may vary)	**J**	Table (non-removeable)
D	Adhesive sheet, mounted	**K**	Leg (2)
E	Right end cover	**L**	Power switch
F	Keypad	**M**	Power connector
G	Tray (removeable)	**N**	Serial port
		O	USB port

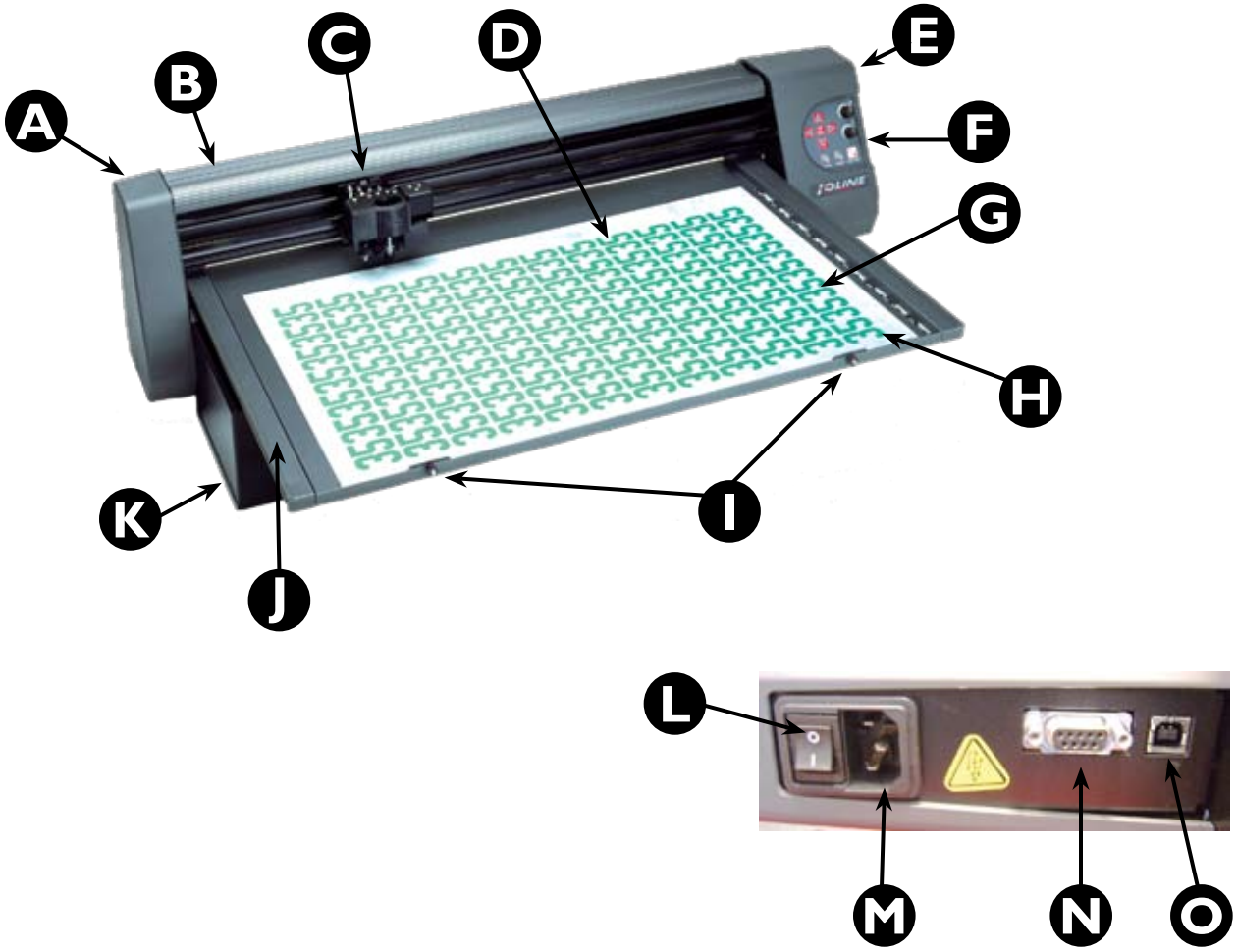

Figure 1. Front view of the 300 System and a close-up photo of the port and power swith on the back of the machine.

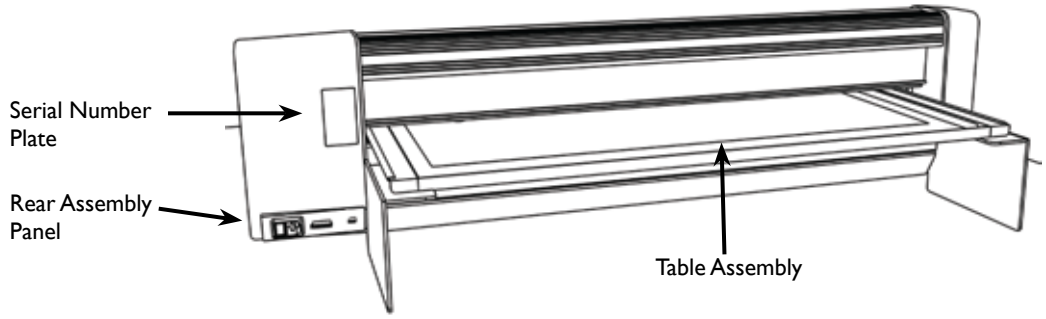

Figure 2. 300 / 350HF System rear view (tray removed).

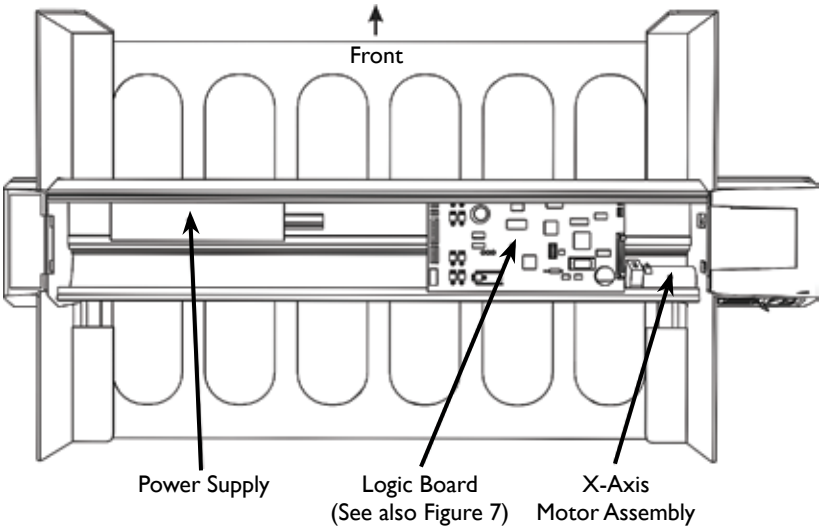

Figure 3. 300 / 350HF System bottom view (bottom cover removed).

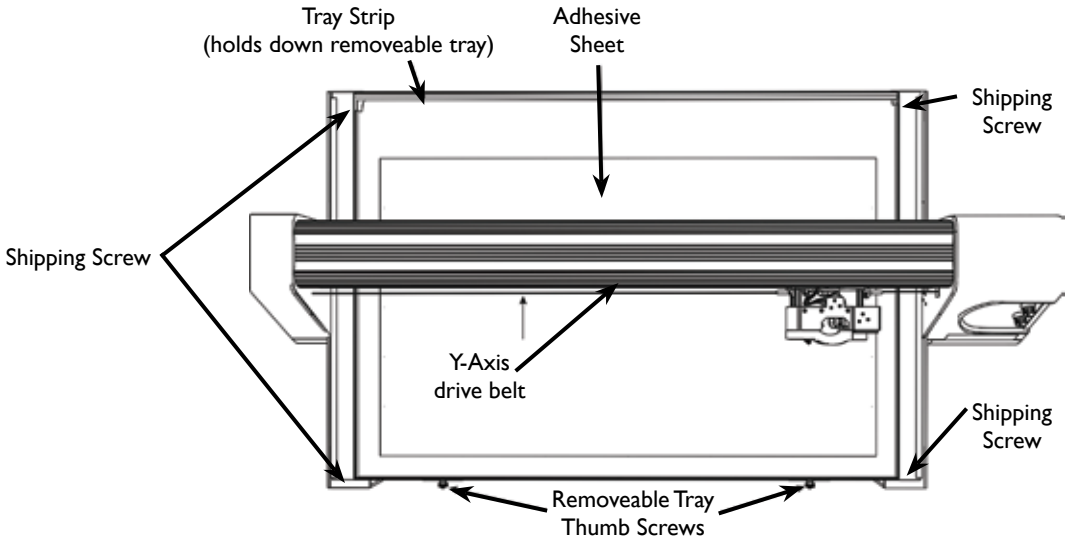

Figure 4. 300 / 350HF System top view.

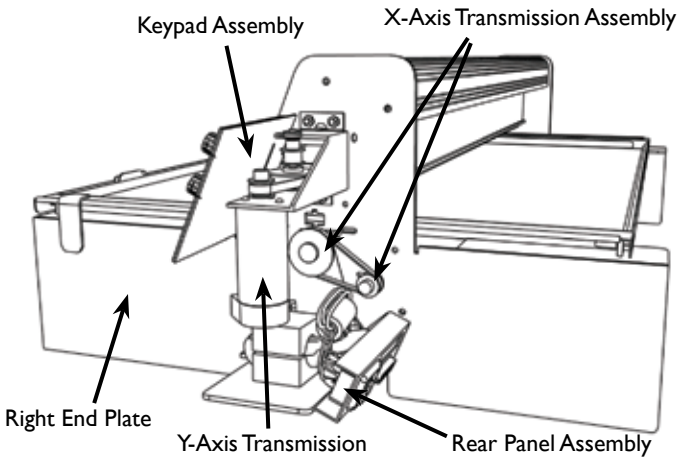

Figure 5. 300 / 350HF System (right view with cover removed).

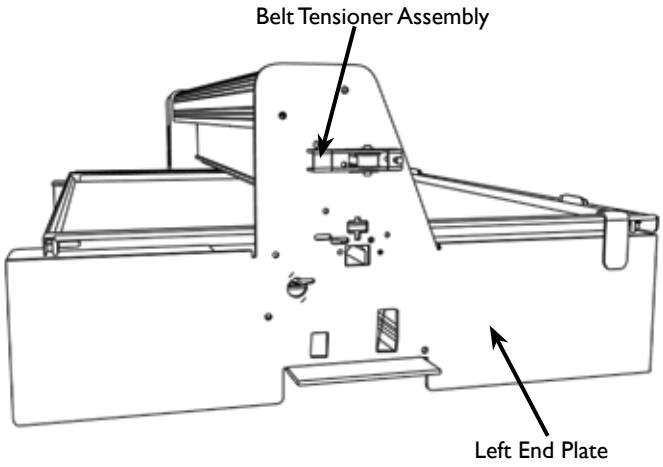

Figure 6. 300 / 350HF System (left view with cover removed).

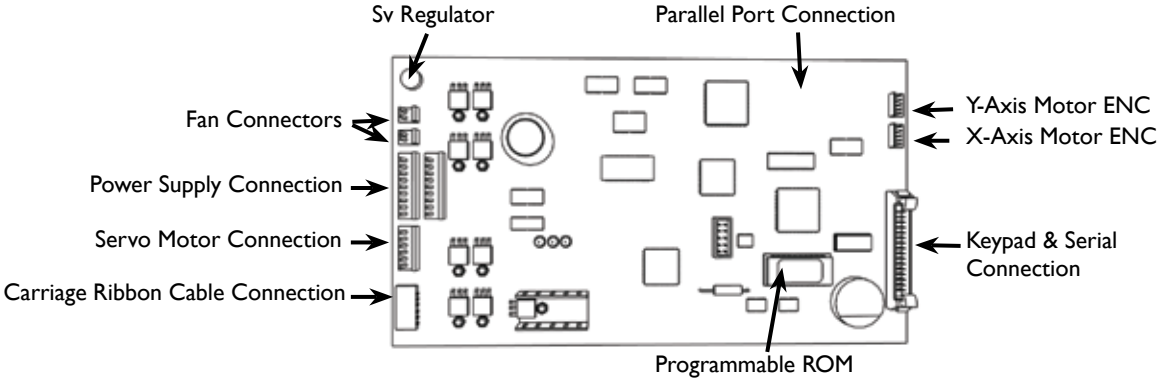

Figure 7. Logic board.

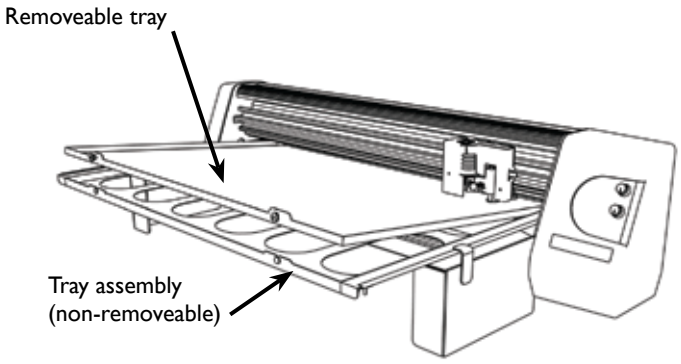

Figure 8. Tray & table assembly.

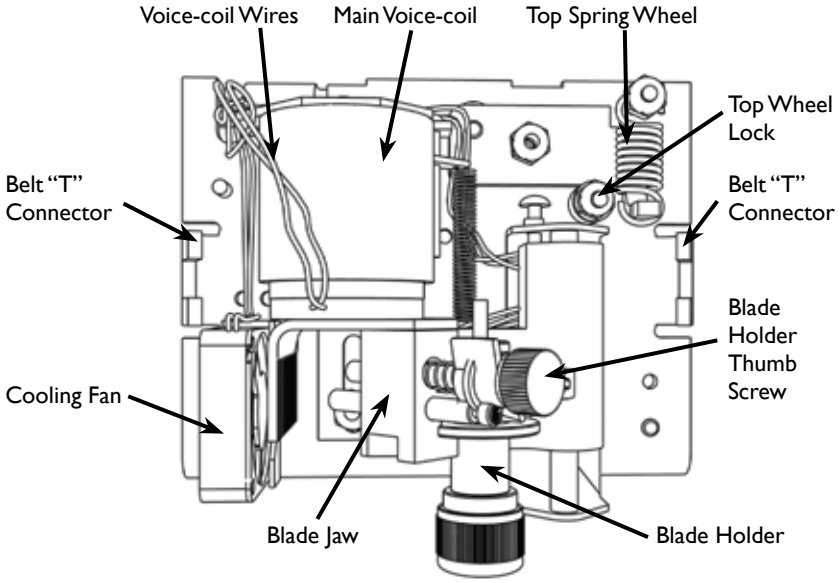

Figure 9. Carriage assembly (with blade holder installed).

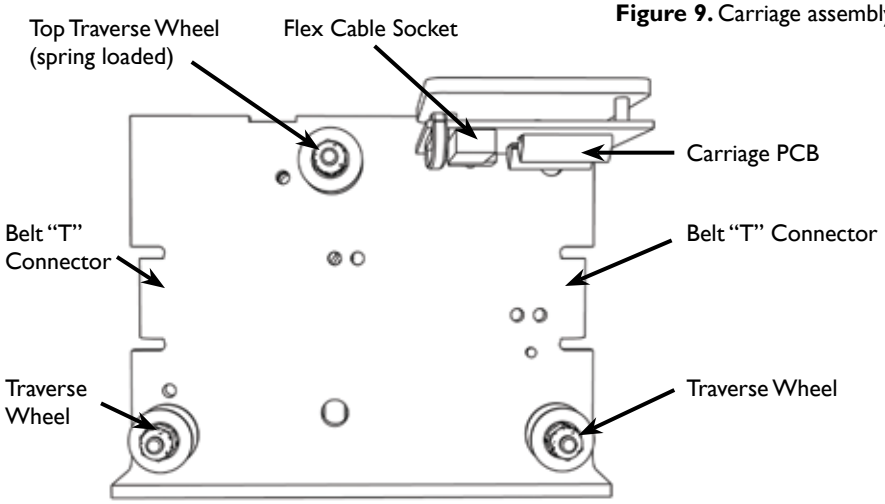

Figure 10. Carriage assembly (rear view).

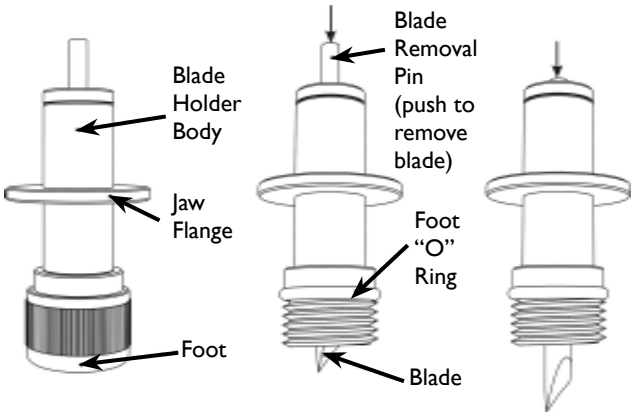

Figure 11. Blade holder assembly (left: with foot, center: with foot removed, right: removing blade.).

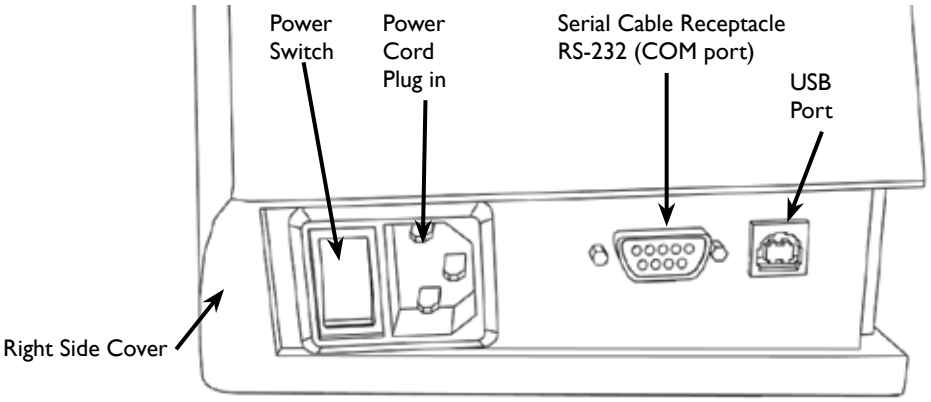

Figure 12. Rear panel assembly.

Chapter 1

Overview

If you are installing the Ioline 301 Software only, refer to the **301 Software User Guide.**

Getting Started

Thank you for purchasing an Ioline 300 / 350HF System.

This Ioline System provides a simple and economical method for cutting appliqué, sports letters and other graphics for use in the manufacture of decorative apparel, athletic uniforms and other products.

Ioline's 301 Software (packaged with the cutter) imports a wide variety of file types and provides a fast and easy method of creating sew disks for automated sewing machines. For designs stitched around the outline only—such as sports lettering—you will find Ioline's 301 software faster and easier to learn than most embroidery design software.

This guide demonstrates how to successfully install and operate this system. You will quickly learn how to:

- Cut appiqué materials using designs from Tajima (.EXT), Melco (.EXP), Barudan (.DAT) or Toyota (.10o) formats. After sewing, these cut pieces will be exactly covered by embroidery machine stitches. See the ***301 Software Quick Start Guide*** for more detailed instructions.
- Cut appiqué materials from designs created in CorelDRAW!® or Adobe ® Illustrator®. These cut pieces can then be heat pressed or sewn onto garments.
- Prepare a wide variety of fabrics for successful cutting.
- Automatically create sew disks and outline stitch instructions for your designs.
- Control puckering, and fraying when working with difficult materials.
- Create text and multi color designs.

Note

The installation instructions contained in this manual are intended to help save you time and money. Read them through before beginning. Should you have any questions, Ioline technical support is available Monday–Friday from 8 a.m. to 6 p.m. Pacific time at **425.398.8282**. Or E-mail **techsupport@ioline.com**.

This page intentionally left blank.

CHAPTER 2

Assembly & Setup

An overview of the complete setup procedure is described in detail in the **300 / 350HF System Quick Start Guide.** ***You'll find the Guide on the CD-ROM in the*** **Accessory Kit.**

CAUTION

Do not lift the cutter by the tray, the dust cover, or the carriage rail. This may cause permanent damage. Use the bottom surfaces of the cutter to lift or move the machine.

300 / 350HF System Assembly

Unpack the Cutter

1. Inspect the outside of the box for damage.
2. This procedure requires two people. Carefully remove the cutter from the box and place it on a flat, stable surface. Save all packing materials and the box. Check the **Packing List** to ensure that all accessories are present.
3. Locate and remove the four shipping screws holding each corner of the table assembly (*See* ***Figure 4*** *for the location of the table assembly shipping screws.*)

Install Software & Manuals

Follow the directions in the ***301 Software User Guide*** to install the Ioline Control Center, 301 Software, Acrobat® Reader®, and all manuals.

CAUTION

The 300 and 350HF Systems are heavy and could cause injury if they fall. A minimum of two people are required to safely unpack the cutters and attach them to the stand.

Connect cutter to Computer

Refer to the ***300 / 350HF System Quick Start Guide***. You will need to select a USB or serial connection and install the 301 hardlock key (dongle).

This page intentionally left blank.

CHAPTER 3

Cutter Functions

Keypad Controls

The keypad provides access to the main cutter functions. These functions can then be fine-tuned using the Control Center software.

Figure 13. The cutter keypad.

Start/Stop

The **Start/Stop** key toggles communication on and off between the computer and the cutter. If the**Start/Stop** key is pressed during cutting or plotting (e.g. the cutter is placed in **Stop Mode**) the machine will finish cutting the current vector and stop. The **Arrow** keys are active when in **Stop Mode**. When the **Start/Stop** key is pressed again, (**Start Mode**), cutting will resume exactly where it stopped.

START Mode	OK = green	**Arrow** keys inoperable, cutter *online* (ready to receive instructions).
STOP Mode	OK = red	**Arrow** keys operable, cutter *offline* (not ready to receive instructions).

Arrow Keys

Never pull or push the tray into position or manually slide the carriage. Always use the **Arrow** keys to move the tray (material) backward or forward, or the carriage from side to side. The cutter must be in **Stop Mode** (*see **Start/Stop** above*) for the **Arrow** keys to function.

Set Origin

Design software usually places the origin in the *lower left* corner of a plot, orienting the cut as shown in **Figure 14**.

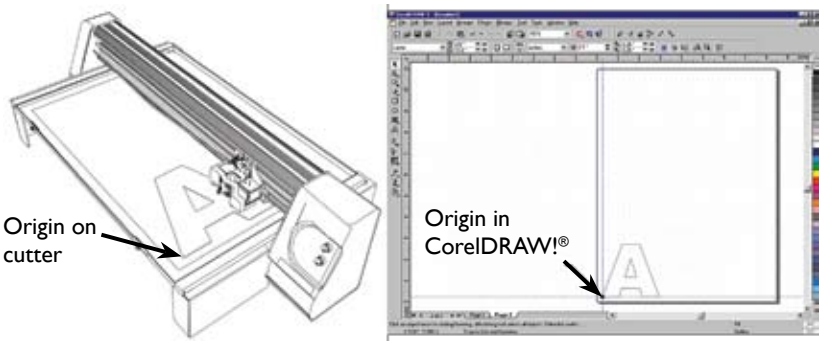

Figure 14. Origin point.

The **Set Origin** key on the 300 / 350HF System sets the initial ***Origin*** or starting position for the blade. If an **Origin** is not set before sending a file to the cutter, the machine will begin cutting at the location where the **Origin** was last set.

To set a new **Origin**, make sure the cutter is in **Stop Mode** (red light on). Use the **Arrow** keys to move the blade or pen to the preferred starting point of the cut, then press the **Set Origin** key. The cutter will then be ready to accept cut/plot files.

Speed

Use the **Speed** knob on the front panel of the cutter to adjust cutting speed. Turn the knob clockwise to increase the speed, or counter-clockwise to decrease the speed. Set the speed according to the type of cutting and material being used. *See **Cutting Material** in **Chapter 4**.*

Force

Adjust the force by using the **Force** knob on the front panel. Turn the knob clockwise to increase the pressure exerted on the pen or blade. *See **Cutting Material** in **Chapter 4** for the recommended settings.* The range of force available at the knob is NOT ADJUSTABLE in the Ioline Control Center.

Note: Using too much force can cause excessive drag, damage the pen or blade, tear the material, or cut through the adhesive sheet.

Test Cut

Use the **Test Cut** button to cut a test pattern every time you change fabric type and adjust the force and blade exposure accordingly. Test cuts are also handy for checking—and, if necessary, adjusting—**Blade Offset** and **Overcut** settings made in the Control Center. (*See the **Control Center** in the next section for details on blade offset and overcut.*)

1. Make sure that material is loaded in the cutter that the blade holder is properly installed in the carriage. Position the blade over the material near the right side of the cutter.
2. Check for the red light. Press the **Start/Stop** key if it is not on.
3. Press the **Test Cut** key for one second. The plotter will cut a small test pattern consisting of a circle within a square.
4. Adjust the force and blade exposure up or down with the **Force** knob and the blade foot. **Repeat** the test cut until the desired line quality is obtained. (*See **Cutting Material** later in this manual for details on adjusting force and blade exposure.*)
5. Successive test cuts are automatically aligned to the left of the last test cut.
6. If the **Test Cut** key is pressed for three seconds, the plotter will cut a 1.9 in. x 7.1 in. pattern (the Ioline Logo).

Repeat

The Repeat key generates one copy of the most recently cut file. The cutter must be in **Stop Mode** (red LED) to activate **Repeat**.

To repeat a cut, move the pen or blade to a new position with the **Arrow** keys before pressing the **Repeat** key. Repeat will:

1. Cut the last sent file, unless the **Set Origin** key is pressed and a new file is sent to the cutter—or until you change settings in the Control Center with the **Update Display** function.
2. If cut files are sent without first resetting the origin, they will be continuously stored in memory as if they were one file. This allows the user to repeat-cut multiple files as a single group. In this case, pressing the **Repeat** button will cut all files sent since the last origin was set—so long as the buffer size is not exceeded. When the 1 megabyte buffer size overflows, the **Repeat** function is disabled to prevent the system from potentially cutting partial files.

Note

To avoid communication port conflicts, do not simultaneously run more than one application that is communicating with the cutter.

The Ioline Control Center

The Ioline Control Center is a utility program that does three things:

- Allows adjustment of settings to tailor output from the computer.
- Allows a completed cut file to be sent to the cutter.
- Includes several diagnostic tests for troubleshooting.

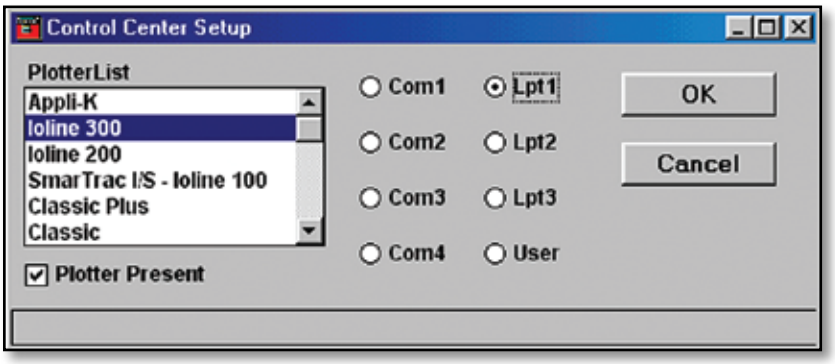

Figure 15. Control Center Setup Screen

Note

Certain design software programs override Control Center settings. Use the Update Display button before and after a cut is completed to verify which program controls the settings. If the settings change, use the design software to modify cutting parameters.

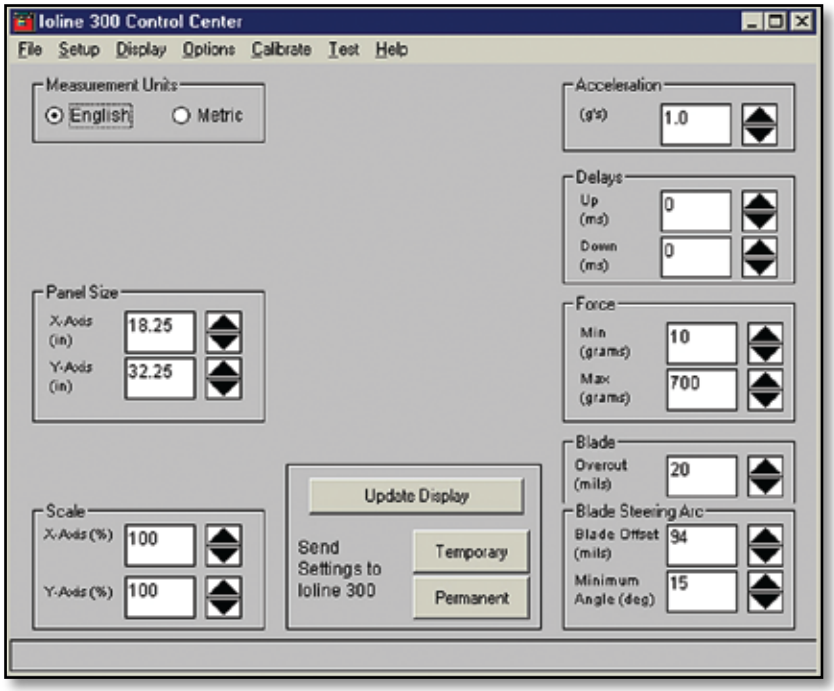

Figure 16. Control Center Main Menu

Changing System Settings

A variety of settings are adjustable to fit specific needs:

- The cutter must be in **Start Mode** (green LED on) when changing system settings. Press the **Start/Stop** key and make sure the green keypad light is on before changing any settings.

- The **Screen Menu** displays the commonly adjusted settings. The **Menu Bar** contains utilities and less common cutter settings.
- The selected changes will be in effect only after one of the **Send Settings** buttons is pushed.

Screen Menu Options

Measurement Units

English or Metric units are available when adjusting settings.

Panel Size

The **Panel Size** is the maximum cuttable area. The factory set (and maximum) **X-Axis Panel** length is 18.25 inches long (50 cm). The maximum **Y-Axis Panel** size is 32.25 inches. The material moves along the X-Axis; the carriage moves along the Y-Axis.

Scale

The factory-set **Scale** is 100%. The cutter cuts the exact size specified in the file. If the scale is 50%, the cutter reduces the cut size by half. The scale of the cutter ranges from 1% to 999%. X- and Y-Axes are set independently.

Update Display

Use this option to update all of the screen values with the current settings stored in the cutter. For example, using **Update Display** after a blade is inserted in the carriage will update the Control Center **Force** settings.

Send Settings to Cutter: Temporary

For on-screen changes to take effect, the changes must be sent to the cutter. **Send Settings to Cutter: Temporary** changes settings for the current session. When the cutter is turned off, permanent settings will be restored upon reboot. Whenever settings change, repeat the **Test Cut** procedure to ensure satisfactory results.

Send Settings to Cutter: Permanent

Sends the current, on-screen settings to the cutter and saves them to be used with subsequent jobs.

Acceleration

Determines how quickly the pen or blade will reach full speed when starting or ending a cut line. Use the Control Center to change the setting within a range of 0.5 to 1.0 g for the 300 System; 0.1 to 1.0 g for the 350HF. The factory-set **Acceleration** is 1.0 g. For time-consuming or difficult cuts, or when you need maximum accuracy, use lower acceleration settings.

Up/Down Delays

The delay setting controls the cutter pause interval after lifting or lowering the pen or blade. Under normal circumstances this setting does not require adjustment. Thick material (e.g. Felt) may require a delay of 25 to 50 ms. The factory set up and down delays are both 0 milliseconds (ms) or 0 thousandths of a second.

Force

The minimum and maximum force settings adjust by turning the **Force** knob on the cutter. The **Force** value remains fixed in the Control Center. The factory-set and default minimum is 10 grams. The maximum value is 700 grams for the 300 System and 2000 grams for the 350HF.

Blade Overcut

Blade Overcut is the distance the blade travels beyond the end of a cut. **Blade Overcut** ensures that each cut actually reaches the point where one cut line meets and slightly overlaps another cut line. This ensures that all of the pieces of the design are completely cut, with no undercuts. The factory-set Blade Overcut is 10 mils. This setting is ignored when a pen is installed in the carriage.

Blade Steering Arc

Blade Offset

The **Blade Offset** is nominally .094 mils, but specific blades can vary within a tolerance. For close work, make tiny test cuts at alternate settings, then pick the best one to maintain maximum accuracy. This setting is ignored when a pen is installed in the carriage.

Minimum Angle

This is the minimum angle for which the cutter blade will perform a blade steering arc. For a very tiny cut, a small or zero angle should be specified. For larger cuts, a greater angle of up to 45 degrees is best. The factory-set value works well with most files. Adjusting this setting for small cuts may improve performance. This setting is ignored when a pen is installed in the carriage.

Menu Bar Items

The menu items along the top of the screen allow adjustment of a variety of settings for computer control of the Ioline plotter. File management, plotter setup and serial port testing can all be accessed from the menu bar.

File

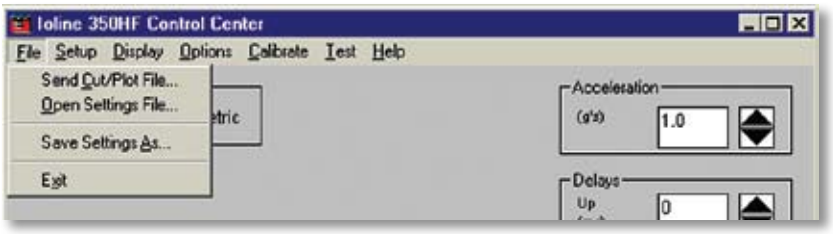

Figure 17. File Menu

Send Cut/Plot File

Use this option to send plot files (.PLT format) to the cutter.

Open Settings File

Opens custom settings for the cutter that have been stored with the **Save Settings As...** option (described below). Once the settings file is loaded, use the **Send Settings** buttons described in the **Screen Menu Options** section.

Save Settings As...

Allows custom settings to be saved to a file so that they can be sent to the cutter at a later time. To retrieve these files use **Send Settings File** (above).

Exit

Close the Ioline Control Center.

Setup

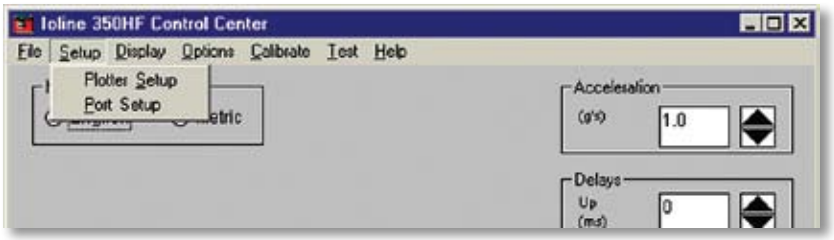

Figure 18. Setup Menu

Plotter Setup

Allows selection of the plotter model and COM port.

Com Port Setup

Provides a list of available COM ports.

Display

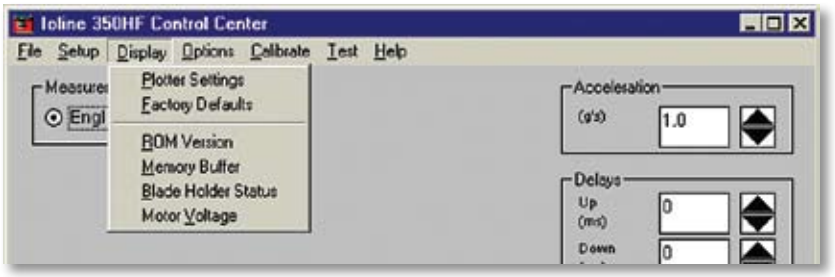

Figure 19. Display Menu

Plotter Settings

Replaces all of the displayed values with the current settings stored in the plotter.

Factory Defaults

Restores factory defaults for all displayed values. A dialog box will appear that allows these values to be sent to the plotter.

ROM Version

Displays the current ROM version installed in the plotter.

Memory Buffer

Displays the amount of buffer memory on the logic board. This value should be 1024 K (1 Meg).

Blade Holder Status

Displays whether or not the blade holder is installed.

Motor Voltage

Displays the voltage of the motors that are installed in the cutter. This option will only work with ROM version **106882 r0** and higher.

Options

Figure 20. Options Menu

Filtering

Displays the filtering dialog window. Some files don't produce quality curves and line structure. Enabling the filtering option helps to smooth out some of these lines.

HP/GL Setting...

Allows the cutter to switch between HPGL/7475 (Lower Left), and HPGL/7596 (Center origin).

Install New Firmware version

1. Turn the cutter on, and wait for it to initialize. Press **Set Origin**. The light on the keypad will turn **Green**.
2. Copy the file that was sent to you by Ioline Tech Support or downloaded off the Ioline web site to the hard drive of the computer that is connected to the cutter.
3. Open the Ioline Control Center.
4. When the Control Center is open, Click on **Options/ Install New Firmware Version**.
5. Click on **Begin Version Install**.
6. The next window shows the file structure on your computer. Find the file that was sent to you (.BIN file). Click on the file, and click on **OK**.
7. The plotter will beep, and the light will turn off as the new firmware begins to load. When it's done, close the Ioline Control Center, and turn the plotter off.
8. Turning the plotter back on while pressing and holding the **Up Arrow** key on the keypad to reset the machine. Release the button when the carriage starts to move to the left.

Note: When the cutter is reset to factory defaults, all user settings (such as **Acceleration**, **Up & Down Delay**, **Blade Offset** and **Angle** and **Calibration**) are reset. To re-calibrate the machine after restoring defaults, see **Calibrate Plotter** below.

Calibration

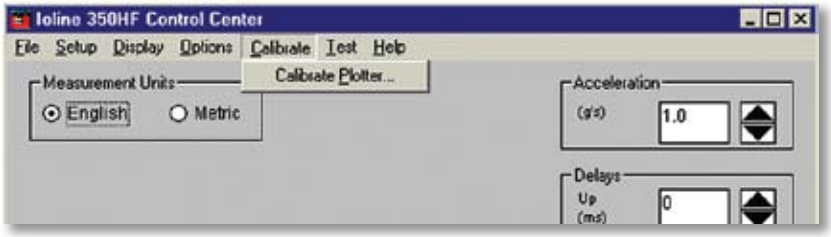

Figure 21. Options Menu: Calibration

Calibrate Plotter

The cutter is calibrated at the factory for maximum accuracy. If you feel the machine is not dimensionally accurate, please contact Ioline Tech Support for assistance.

Test

Figure 22. Options Menu: Test

Serial Test

Tests the serial connection between the plotter and the computer. *See **Communication Testing** for more information.*

Computer Port Test

Tests the serial port on the computer with a special tool available from Ioline. *See **Communication Testing** for more information.*

Plotter Port Test

Tests the serial port on the plotter with a special tool available from Ioline. *See **Communication Testing** for more information.*

Help

Figure 23. Help Menu

Contents

Lists the contents of the help screen.

About

Provides revision information about the Ioline Control Center software.

This page intentionally left blank.

Chapter 4

Cutting

Cutting Material

Most of the time, design files are sent directly from 301 Software to the plotter. If you require greater control over plotter settings, you can use the Ioline Control Center software to make adjustments, test cutter communication and send design files.

Before cutting material, follow the steps below to turn the cutter on, load the material, install a blade holder, adjust the blade, and set an origin.

Loading the Material

1. Press the **Start/Stop** button on the keypad. when the light turns red, the cutter will be off-line and the **Arrow** keys can be used to position the blade holder. The **Up** and **Down Arrow** keys move the table back and forth, while the **Left** & **Right Arrow** keys move the carriage side to side. Press the **Down Arrow** key to move the table forward.
2. Loosen the thumb screws, remove the tray from the machine and place it on a flat surface. Pull the backing paper off one side of a sticky sheet (*see note in margin*) and align the sheet within the area marked by engraved corner guides on front top surface of the tray.
3. Peel off the remaining protective cover sheet from the adhesive sheet.

   Note: Keep this cover sheet clean and reapply it at the end of the day to protect the adhesive surface from dust, fibers, and air. Doing so will extend the life of the adhesive sheet. Felt and other materials leave heavy fiber residue on the sheet over time. You can gently wash the sheet with warm, soapy water and let it air dry to remove the filaments and help extend its useful life.
4. Put a corner of the material you wish to cut over a corner of the adhesive surface and gently press it down, working from one end to the other and pushing out any bubbles as you go. (*See caution in margin.*)
5. Replace the removable tray in the table assembly, and retighten the thumb screws.
6. Locate the blade holder in the **Accessory Kit**.

CAUTION

To prevent the tray from warping and to assure continued cut quality, always place the tray on a flat, even surface before pressing material down on the sticky sheet.

Note

Light tack sticky sheets have a stronger adhesive bond on one side to help prevent slippage during cutting. To install, peel back the protective paper and feel each side. Place the stickiest side of the sheet down on the tray.

CAUTION

Make sure the material does not extend beyond the edge of the table where it could get caught in the cutter. DO NOT CUT REGULAR PAPER as it will stick permanently to the adhesive surface. Always test a small piece or corner of your materials on the sticky sheet to verify the bond is neither overly strong nor overly loose. Change to a different tack sticky sheet if necessary. By their very nature, materials with loose fibers (such as felt) reduce the life of sticky sheets.

CAUTION

Blades are very sharp. To avoid injury, exercise extreme caution when inserting the blade into the blade holder.

Note

To prevent damage to the blade, do not press the blade down on a hard surface when inserting it in the blade holder.

Installing a Blade and the Blade Foot

A blade and a blade holder are included in the Accessory Kit. To install the blade and blade foot:

1. Remove the foot from the assembly by unscrewing it counter-clockwise.
2. Slide the blade into the hole in the blade holder until it bottoms out. The blade should spin freely. Notice the pin on the opposite side of the blade holder, it should be sticking out about 3/16-inch.
3. Screw the foot onto the blade holder (clockwise). Stop before the blade emerges from the hole in the foot. The blade is properly exposed for test cutting if you lightly draw your fingertip over the top of the foot and can just barely graze the tip of the blade.

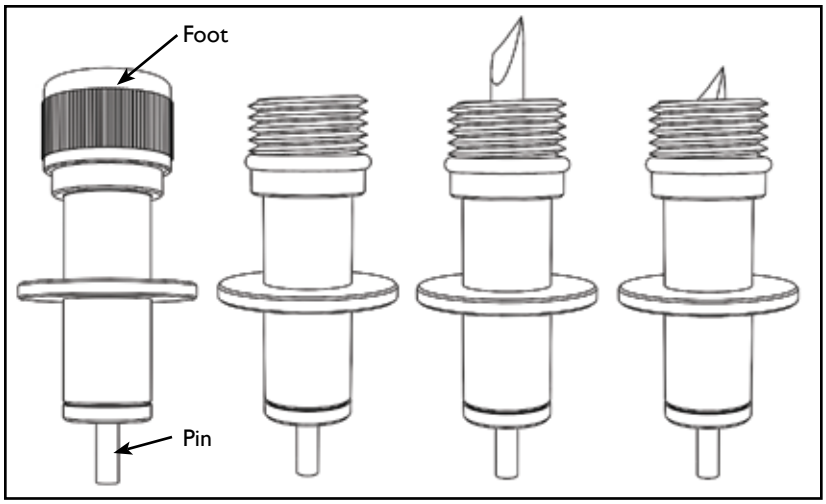

Figure 24. Installing the blade and blade foot.

Installing a Blade Holder or Pen

1. Rotate the thumb screw on the carriage until there is enough room to insert the blade holder or pen.
2. If using a blade holder or plotter pen, slip the flange into the slot in the carriage jaw. If using a regular pen, position the tip 1/10-inch off of the platen when the jaw is in the up position. The cutter can hold any pen with a maximum barrel diameter of 7/8-in (22-mm).
3. Tighten the thumb screw until the blade or pen is secure.

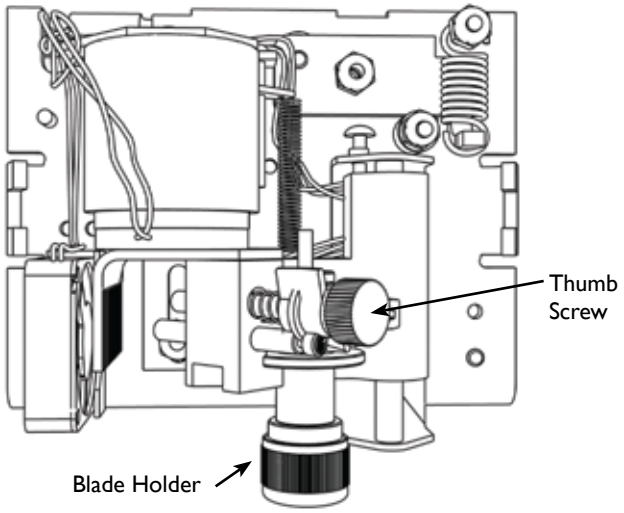

Figure 25. Blade holder in the carriage jaw. (Carriage shown with cover removed.)

Adjusting Blade Exposure and Force

Properly adjust blade exposure and force to achieve good cutting results.

Adjusting Blade Exposure:

1. On the keypad, turn the **Force** knob clockwise to maximum. Set the **Speed** to 50%. The maximum force setting in the Control Center for the 300 is 700g in the (2000g for the 350HF) and is not adjustable.
2. Check that the blade tip is not visible when viewing the blade from the side. This technique approaches the correct blade exposure from too little with no chance of having too much (which could damage the blade).

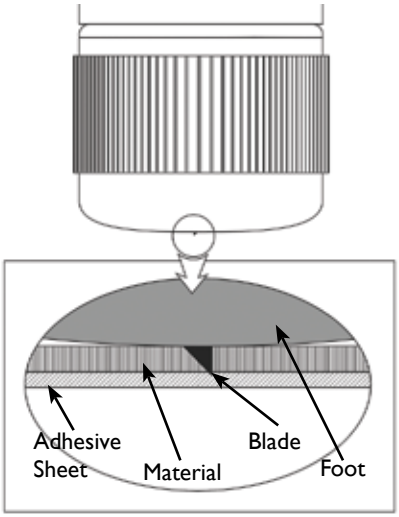

Figure 26. When the blade is properly exposed, it lightly scores the backing.

3. Press the **Start/Stop** button on the front panel until the LED is red. Move the carriage until the blade is near the right edge of the material.
4. Press the **Test Cut** key for one second. The 300 / 350HF will cut a test cut pattern. Because the blade is just barely exposed, the material will not cut or should only be lightly scored at this point.

5. Turn the foot 1/8 turn upward (clockwise from below). Press the **Test Cut** key. The machine will create the next test cut to the left of the previous test.
6. Continue increasing the blade exposure and making test cuts. When the blade is properly exposed, the test design should completely weed (separate from the surrounding material) and the blade should lightly score the adhesive sheet.

Force Adjustment:

Every type of material requires different cutting force. Adjust blade exposure before setting force. (*See instructions above.*)

1. Turn the **Force** knob down slightly from maximum, about one mark, and repeat the test cut. Use full force if the test cut is not complete.
2. If the test cut is complete, turn the **Force** down again and repeat the test cut. Continue until the cut is incomplete. This indicates that there is not enough force to push the exposed blade fully into the material. At this point turn the **Force** knob up one mark, which is just enough.

Verification:

1. Press the **Test Cut** key for 3 seconds. The cutter will cut a 1.9 inch x 7.1 inch design (the Ioline logo).
2. If the cut piece does not separate cleanly and leave a light scoring on the adhesive sheet, try another 1/8 turn upward (counter clockwise from above) of blade exposure and a very slight increase in force.

Sending a Cut/Plot File to the Cutter

Always load the cutter and perform test cuts to determine the optimal settings before sending any files. See ***Adjusting Blade Exposure and Force*** for more details.

In addition, make sure that the carriage and material are in the proper position and that an origin is set by positioning the blade and pressing **Set Origin** on the keypad (green LED).

Send the file directly from 301 Software following the directions in the ***301 User Guide*** or use the Ioline Control Center to fine-tune settings and send to cutter.

From the Ioline Control Center Software:

1. From the menu bar select **File**, **Send Cut/Plot File**.
2. Either enter the path and file name of the cut or select the correct location from the directory\file lists in the dialog box. For example, the path might be:

   C:\IOLINE\<filename>.plt.

4. Select **OK**.

Pause Cutting

1. Press the **Start/Stop** key to place the cutter in **Stop Mode** (red LED).
2. When cutting is interrupted, the carriage and tray can be moved with the keypad **Arrow** keys.
3. Press the **Start/Stop** key. The keypad LED will change from red to green and the system will resume cutting at the point where the blade was positioned before you put the machine in **Stop Mode**.

Canceling a Cut

1. Press the **Start/Stop** key to place the cutter in **Stop Mode** (red LED).
2. If using the Control Center software, click on the **Abort** button in the **Send File** window. From third-party design software, refer to the design software manual or consult the software dealer to determine how to cancel the cut.

   Note: If this step is skipped the cut will continue when a new origin is set.
3. Press the **Set Origin** key to erase the last file from the cutter's memory.

Suggested Settings

There are many variables that affect cutter output quality. Ioline recommends using low force and speed settings when making initial test cuts. Gradually increase these settings to determine optimal values for the material. **Figure 27** lists settings for a variety of material types. Force values are provided as starting reference only. Optimal settings may vary due to manufacturer, color, age, and temperature of the material.

Speed & Force

(Settings relate to a clock)

Material	Thickness	Blade	Acceleration	Speed	Force
Stahl's Tackle Twill (with heat sensitive backing)	16 mils	30/45 degree	1.0	5:00	1:00
Stahl's Tackle twil (with Pressure sensitive backing)	16 mils	30/45 degree	1.0	5:00	1:00
Stahl's Thermal Film	7 mils	45 degree	1.0	12:00	11:00
Stahl's Thermal Flock	25 mils	45 degree	1.0	12:00	11:00
Elastic Twill	15 mils	30/45 degree	0.5	10:00	3:00
Cotton Acrylic	11 mils	30/45 degree	0.5	9:00	2:00
Rayon	27 mils	30/45 degree	0.5	8:00	3:00
Felt (Without backing)	23 mils	30 degree	0.5	10:00	5:00
Soft Felt (without backing)	37 mils	30 degree	0.5	10:00	5:00
Soft Felt (With Backing)	26 mils	30 degree	0.5	10:00	3:00
Felt (with backing)	43 mils	30 degree	0.5	12:00	3:00
Foam Fabric	31 mils	30 degree	0.5	12:00	2:00
Light Canvas	18 mils	30/45 degree	0.5	1:00	5:00
Stretch Knit Fabric	19 mils	30 degree	0.5	9:00	12:00
Thin Textile Suede	38 mils	30/45 degree	0.5	2:00	12:00
Medium Textile Suede	40 mils	30/45 degree	0.5	5:00	2:00
Imitation Suede	19 mils	30/45 degree	0.5	5:00	2:00
Strap Twill	24 mils	30/45 degree	0.5	9:00	5:00
Ideal Stencil "Oil-Board"	17 mils	45 degree	1.0	5:00	5:00
Stencil Mask	11 mils	45 degree	1.0	5:00	5:00
Neon Mask	8 mils	30/45 degree	1.0	5:00	12:00
Transparency Film	5 mils	45 degree	1.0	5:00	9:00

Figure 27. Suggested settings by material type.

Advanced Cutting

Kiss-cutting: a time-saver

Stacked sheets of material can be "kiss-cut" one layer at a time to create a single piece—leaving only one integrated graphic and one **Placement** stitch to sew. Typically, the upper material layer(s) has a pressure-sensitive backside which adheres to the layer(s) below. After the top most layer is cut, the excess material on that layer is weeded so that the next layer down is accessible. After the bottom most layer is cut, the design weeds as one piece.

Note

Kiss-cutting can create more scrap material for the upper layer(s) than when you cut each layer separately. To determine whether it's best to kiss-cut as a single graphic or cut and assemble the pieces separately, compare your labor savings with kiss-cutting to the cost of material waste ***plus*** the cost in labor of positioning each piece and laying down extra Placement stitches.

Prepare to Cut

1. Place bottom material layer onto adhesive sheet and smooth out any air bubbles. Place and smooth the foreground material on top of the background material, sticky side is down.
2. Load blade holder into carriage jaw.
3. Adjust the blade and blade holder using the test cut procedure described earlier in this chapter.
4. Once the blade is adjusted, use the keypad **Arrow** keys to position the **Table** and carriage so that the blade holder is over the lower right corner of the material (lower left origin of plot file).
5. Press **Set Origin** on the keypad to obtain a green keypad light.

Note

When kiss-cutting, it's easiest to use materials of similar type and thickness so that the blade does not need to be readjusted.

Send first cut file

1. Open 301 Software.
2. Locate the directory and file you wish to open (**Figure 28**). Double click on the file (or select the file and click on **Load Import File**).

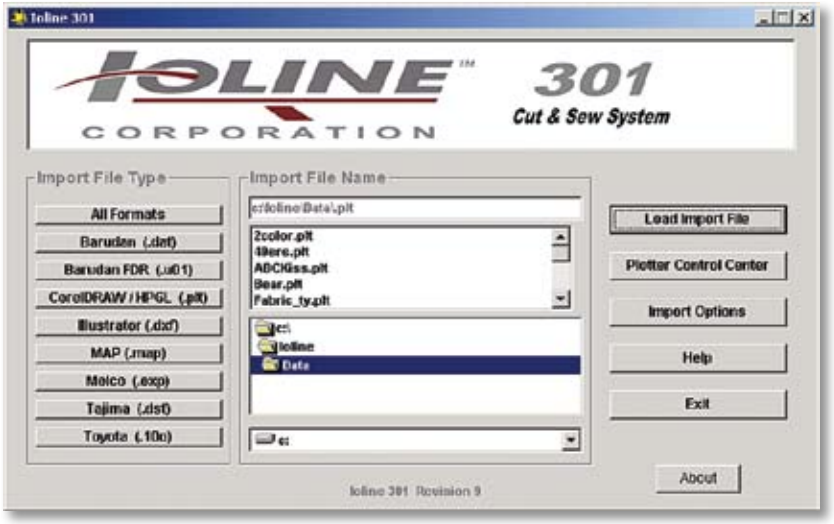

Figure 28. 301 Software Main Window.

3. Select **Design Setup**.
4. Under the **Color Setup** heading, select **K-C ALL** (**Kiss Cut All**). (**Figure 29**).

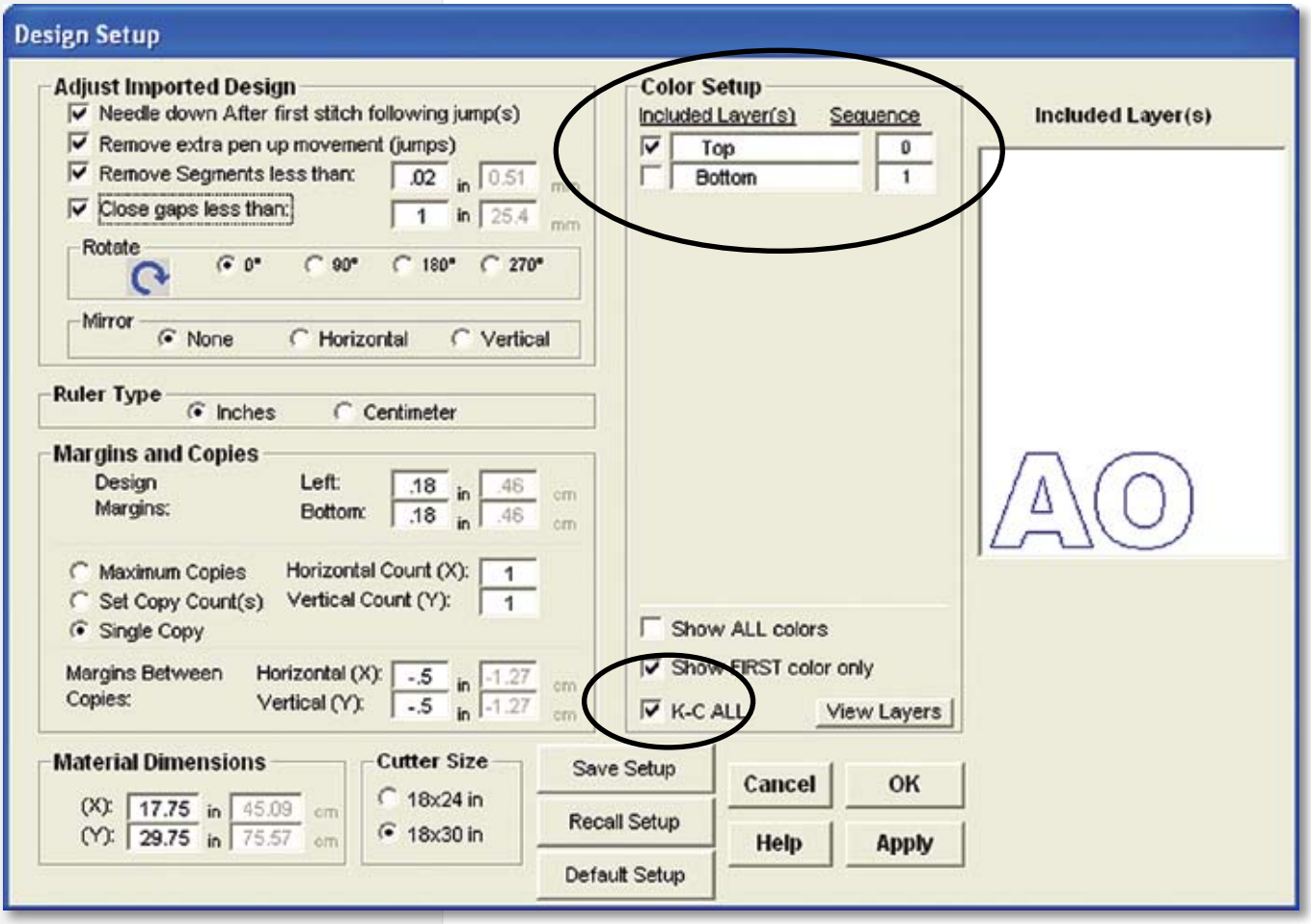

Figure 29. 301 Design Setup Window.

5. Under the **Color Setup** heading, select the color that corresponds to the top layer of the design to be cut. This should be the profile with the smallest outline.
6. Select **OK**.
7. Select **Send to Cutter**.
8. Select **OK**.

Send second cut file

1. When the first cut is done, press the **Start/Stop** button (the light should turn **Red**) and move the tray forward. Weed the excess material around the top graphic.
2. Press **Start/Stop** button on the keypad. The light will return to **Green** and the tray and head will move back to the original starting point.
3. Under the **Color Setup** heading, select the color (next upper most layer) of the design and deselect the color that was just cut. The profile of this next layer should have a larger outline than the previously cut layer (**Figure 29**).
4. Select **OK**.
5. Select **Send to Cutter**.
6. After it has finished cutting, weed away the excess material.

Note

Kiss-cutting can also be performed in reverse. The benefits include:

1. The ability to weed all layers of fabric together;
2. No blade foot adjustment required for layers of like fabric;
3. Materials with a paper backing (e.g. twill) can be cut normal or mirrored.

To reverse kiss-cut, cut the background (bottom layer) first, then lay on and cut the next layer, repeating for each layer until all layers have been cut.

Communication Testing

The Control Center features three diagnostic tests that help identify and isolate communication problems. Two of these tests require a diagnostic module, available from Ioline or an authorized dealer. The module works on both the computer and cutter serial (COM) ports.

Communication Test

To diagnose communication issues between the computer and plotter parallel (LPT) or serial (COM) ports, select **Control Center**, **Test Menu**. (The diagnostic module is not required to run this test.)

1. Turn the plotter off and connect it to the computer via a serial or parallel port cable. See the section ***Connect the Cutter to the Computer*** in the ***Chapter 2*** for more details.
2. Start the Ioline Control Center. Select **Test**, **Communication Test** from the menu bar at the top of the window.
3. Turn on the cutter while holding down the **Test Cut** key on the keypad until the cutter beeps and the light flashes three times. The machine is now in **Test Mode**.
4. If testing the serial (COM) port, press the **Start/Stop** key on the cutter and verify that the handshake line (CTS) status displayed on the computer screen toggles **ON/OFF**. Leave the handshake line **ON**. This is not necessary for the parallel (LPT) port.
5. Press the **Repeat** key to switch the cutter into **Echo Mode**. The green light will come on.
6. Press a key on the computer and verify that the character transmitted equals the character received. If the characters match, then the connection between the cutter and computer is working properly.
7. Select **Exit** after the communication test is complete.
8. Turn off the cutter at the end of the test to exit **Test Mode**.

If the results in **Step 6** indicated a character mismatch, try the next test, below, to diagnose further.

Testing for a Faulty Cutter Serial Port

The diagnostic module is required for this test.

1. Connect the diagnostic module directly to the cutter COM port (bottom).
2. From the **Control Center Main Menu**, select **Test**, **Plotter Port Test**.
3. Turn on the cutter while holding down the **Test Cut** key on the keypad. Hold down the **Test Cut** key until the cutter beeps and the light flashes three times. The cutter is now in **Test Mode**.
4. Press any **Arrow** key on the keypad to transmit and receive characters. Verify that the cutter beeps.
5. Turn off the cutter at the end of the test. This will exit **Test Mode**. If this test fails, the cutter port is faulty.

Testing for a Faulty Computer Serial Port

The diagnostic module is required for this test.

1. Connect the diagnostic module directly to the COM port on the computer. If the computer COM port has a 9-pin connector, use a 9-pin to 25-pin adapter between the COM port and diagnostic module.
2. From the **Control Center Main Menu**, select **Test**, **Computer Port Test**.
3. Verify that the COM port selected is the correct one. If it is not, select the proper **COM Port**.
4. Verify the CTS handshake line is on.
5. Press any key on the computer keyboard and verify that the character transmitted equals the character received.
6. Select the **Exit** button at the end of the test. This will exit **Test Mode**. If this test fails, the computer port is faulty.

This page intentionally left blank.

Cleaning the Traverse Extrusion and Carriage Wheels

Over time, dust and debris can accumulate on the traverse extrusion (**Figure 30**). To keep it clean, wipe the traverse down from time to time with a lint-free cloth dampened with (pharmacy grade) isopropyl alcohol. Start where the carriage wheels ride on the rail. Move the carriage side to side while wiping to clean the entire surface.

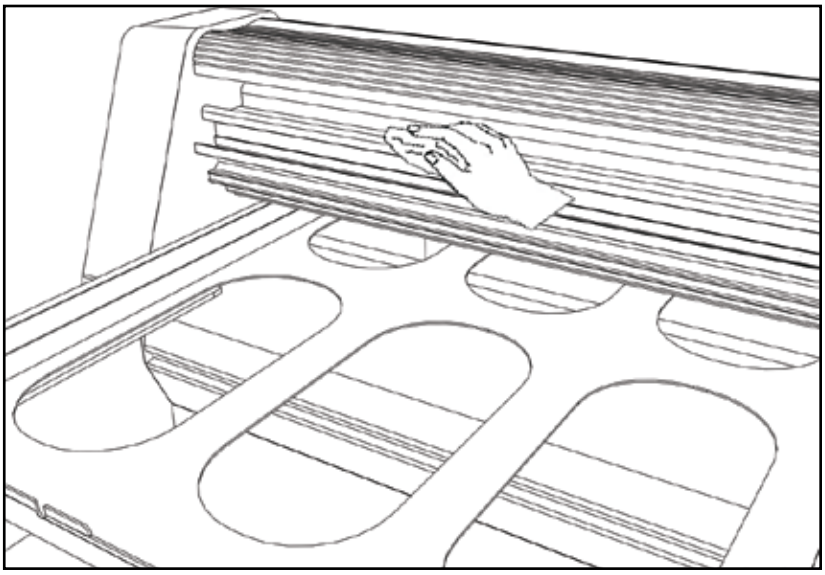

Figure 30. Cleaning the traverse extrusion

Cleaning the Blade Holder

The 300 / 350HF System employs a ***drag knife*** style blade. To operate properly, the blade must be able to rotate freely in the holder. Over time, the blade holder has a tendency to accumulate fuzz—especially when cutting loosely woven fabric. Regularly remove any residue that clings to the blade holder to assure optimum cutting.

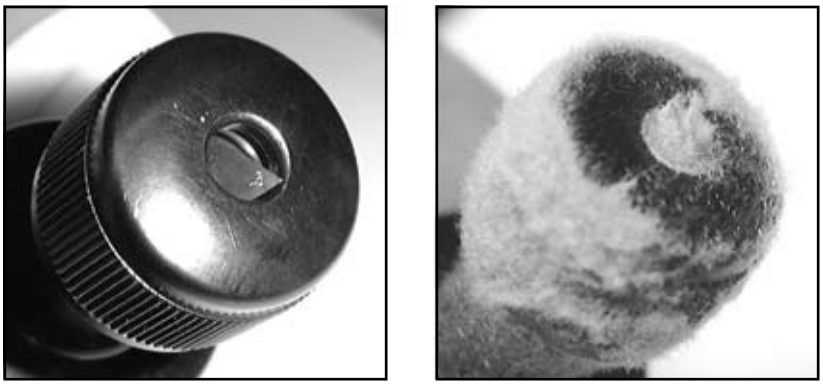

Figure 31. A clean blade holder (left) and a blade after cutting several sheets of twill (right).

CAUTION

These diagnostic procedures may present an electric shock hazard and should only be performed by qualified technical personnel.

General Disassembly Procedures

The following procedures describe the basic disassembly of the cutter to gain access to the keypad, power, and drive components. ***Please pay close attention to the Caution notes.***

Removing the End Covers

1. Turn off the cutter and unplug the computer data and power cables.
2. Remove the two black phillips head screws, and the single silver phillips head screw on the bottom of the cover, then remove the right cover. To access the rear black screw, you may have to move the tray forward (**Figure 32**).
3. Remove the two black phillips head screws and the left cover (**Figure 33**).

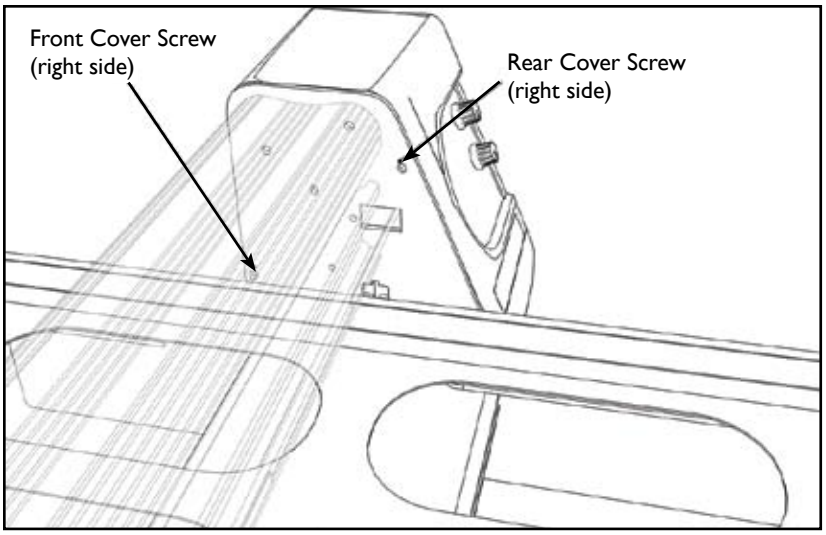

Figure 32. Right side (black Philips head) cover screws.

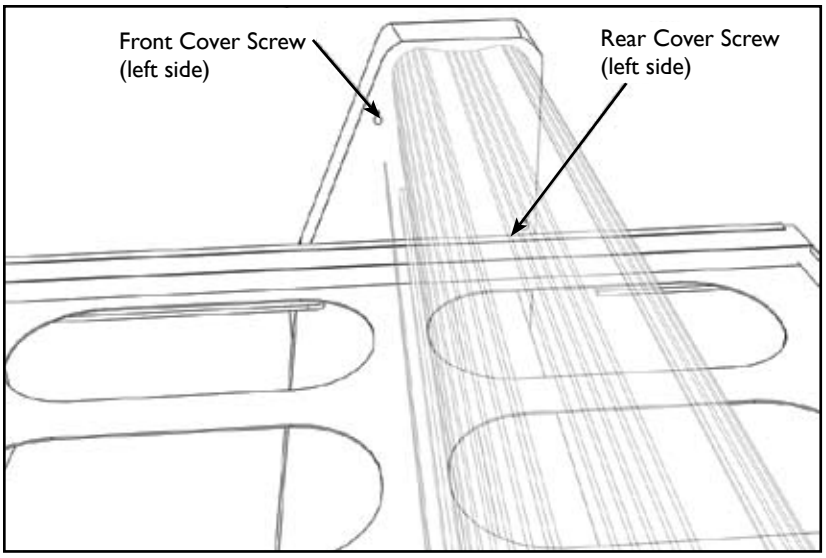

Figure 33. Left side (black Philips head) cover screws.

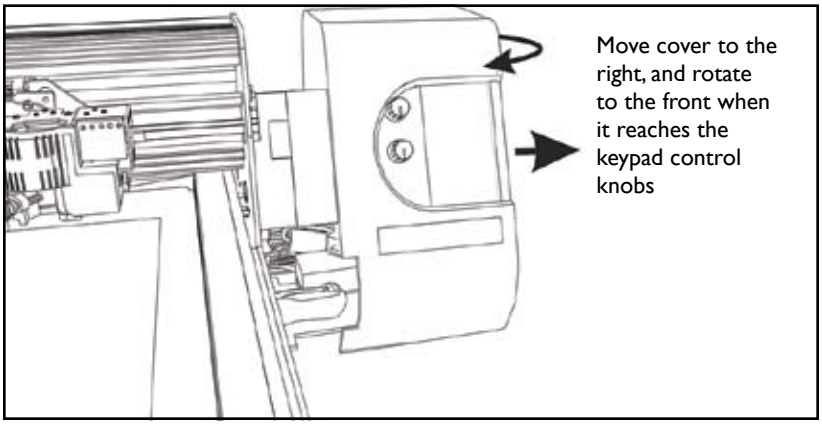

Figure 34. Removing the right cover.

CAUTION

The cutter is very heavy and could cause an injury if it falls. Do not attempt to move this system alone. Use two people.

CAUTION

Do not lift the cutter by its top dust cover, or the tray assembly. Use the bottom surfaces of the end plates for lifting and moving the plotter.

Removing the Bottom Cover for Internal Access

Tools Required:

- Phillips head screw driver.
- Two people capable of lifting 50 pounds each.
- Grounding strap (optional).

Perform the Following Disassembly:

1. Turn off and unplug the computer. Disconnect the data cables.
2. Move the carriage assembly to the right side of the cutter.
3. Remove the right side cover. (***See the previous section.***)
4. With two people, flip the cutter over onto it's top dust cover. Place the right side cover under the tray so the machine doesn't fall over while it's on it's top (**Figure 35**).
5. Remove the Phillips screws from the bottom cover (**Figure 36**).
6. While removing the bottom cover, take care in unplugging the fan wire from the logic board

Important: Consult Ioline Customer Service or the **300 / 350HF Service Manual** *before proceeding further.*

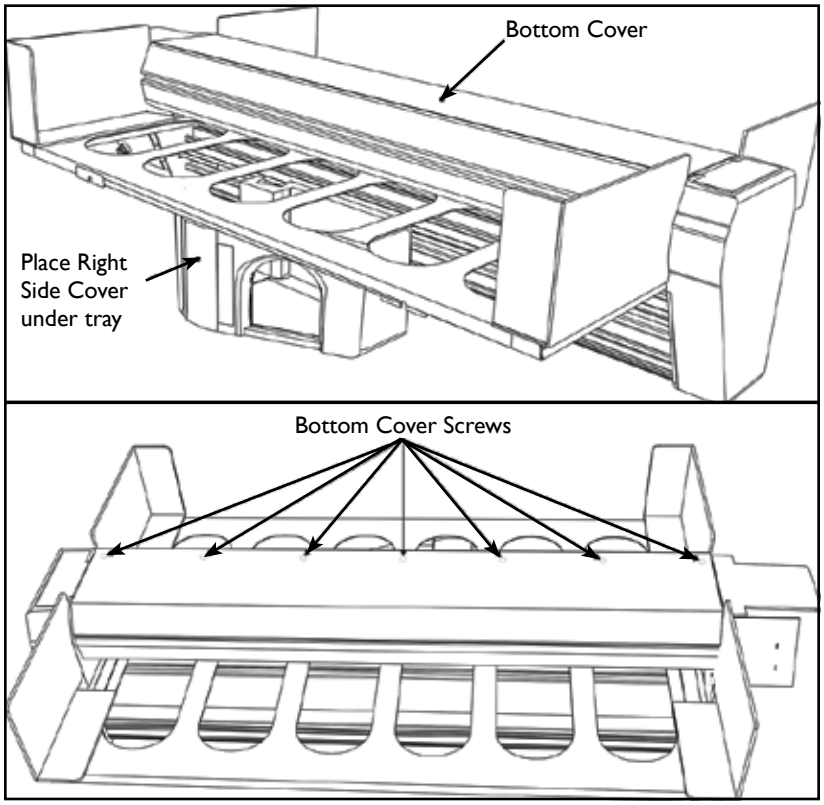

Figure 35. Turn the cutter over (above) and support the tray with the right side cover. Locate and remove the bottom cover screws.

Troubleshooting

Start with the basics when troubleshooting the 300/350HF System. Consider whether the problem may be related to the computer, a cable, the design software, or the cutter.

Did you recently change or upgrade your computer operating system, install new peripherals or software? Any of these can cause conflicts. Consult the product manuals—or call the manufacturer or dealer—if it appears that fault may lie with the computer or software.

If you suspect a problem with the 300 / 350HF cutter, begin by making sure power is on and that the cable between the machines is securely connected. Test the connection using the methods described in the ***Communication Testing*** section of this chapter. Consult the following chart for more detailed troubleshooting techniques:

Common Problems

Problem	Cause	Solution
The cut file doesn't start in the correct place on the tray.	The **Origin** has not been set.	Press the **"Set Origin"** button on the keypad with the blade positioned where the cut file should start.
After sending a file, the 300 doesn't cut.	There is a communication problem or the 300 is in **Stop Mode** (red LED).	Make sure the serial or parallel port on the computer and the 300 are configured properly. Or press the **"Start/Stop"** button on the keypad to obtain a green LED.

Error Messages

Error messages that are specific to the 300/350HF are divided into two categories; software errors and LED codes. Software errors present themselves on the computer screen and usually indicate a communication problem. LED codes are visible below the keypad on the front panel and can be green, red or a combination of both. The LED code table in this section helps isolate obvious external or communication problems. More comprehensive mechanical and electronic troubleshooting techniques are described in the ***300 / 350HF System Service Manual***.

Control Center Software Errors

Error	Problem	Solution
Could not open COMx or LPTx.	The software could not locate the cutter on the specified COM or LPT port.	Verify that the cutter is connected to that port or check that the operating system recognizes the port.
Green light not illuminated or cutter not connected to COMx or LPTx.	The software opened the port but could not get a response to the cutter.	This situation can occur if you try to interact with the cutter while it is in operation. If so, wait for the 300 to finish cutting and resend the file. Otherwise, verify that the cutter is connected to the selected port and that the cable connecting the computer to the cutter is not faulty.
Wrong Ioline plotter model. Please try again.	The Control Center cannot match the cutter that was chosen at Start Up with the one found during initialization.	Select the correct plotter from the list.

301 Software Errors

Error	Problem	Solution
Unable to open Comm: X. Please verify port setup and try again.	The cutter is not plugged in or is connected to the wrong port.	Verify that the cutter is connected to the selected port and that the cable connecting the computer to the cutter is not faulty.

L.E.D Codes

LED Sequence	Problem	Solution
3+ Second pause then repeat	1. Buffer overflow. 2. Communications problems. 3. Defective RS-232 chip.	1. Perform cutter reset as outlined in ***300 / 350HF Service Manual***. 2. Perform communication test, as outlined in ***Chapter 4***. 3. Replace the RS-232 chip.
3+ Second pause then repeat	Outdated firmware.	Check the Firmware version, install firmware if needed. Contact Ioline Tech Support.
Constantly Repeating	Plotter language syntax error.	The file being sent to the cutter is not written in the language that the cutter expected. Open the Ioline Control Center and run a test file. If the error doesn't happen again, check the original file for problems.
3+ Second pause then repeat	Carriage (Y-Axis) jam.	Check to make sure the carriage moves side to side freely and remove all objects causing the jam to occur.
3+ Second pause then repeat	Table (X-Axis) jam.	Check to make sure the tray moves in and out freely and remove any objects causing the jam to occur.
2 Red Flash 2 Green Flash repeat	Logic board error	Call Ioline Customer Service.

Legend	
	Solid GREEN Light Emitting Diode (LED)on the keypad.
	Blinking GREEN Light Emitting Diode (LED)on the keypad.
	Blinking RED Light Emitting Diode (LED)on the keypad.

This page intentionally left blank.

CHAPTER 6

End Notes

Service & Support

Ioline has many years of experience working with sports and decorative apparel professionals. Feel free to contact us if you have questions—or to share information.

Getting Help

Ioline is committed to providing the highest quality service and support to its customers. If you need assistance with an Ioline 300 or 350HF System, a number of resources are available:

1. First, refer to this ***User Guide*** for answers to your specific questions.
2. Many detailed troubleshooting and repair issues are listed in the ***300 / 350HF System Service Manual***, available upon request from Ioline Customer Service.
3. Consult the support section of the Ioline Web site:

   www.ioline.com

4. For additional assistance, contact your local dealer or Ioline Customer Service. Contact information is listed under ***Customer Service*** in this chapter.

Any warranty servicing of this product not specifically described in this manual must be authorized in writing by Ioline Customer Service. You may obtain service by calling or faxing Ioline Customer Service. The technicians will help you determine the nature of the problem. If factory repair is necessary, you will receive a RMA (Return Material Authorization). Please gather the information indicated on the next page before contacting Ioline or your dealer.

1. When returning a machine, carefully package the equipment in its original container or packaging equivalent. You may purchase shipping containers from Ioline by contacting Ioline Customer Service. **Ioline is not responsible for any damage due to inadequate or improper packaging.**
2. Carefully wrap and secure all items in the shipping container to prevent damage. Seal the container and note the RMA number near the address block.

3. Ship the container using FED-EX or another approved carrier. COD shipments **ARE NOT ACCEPTED**. An Ioline representative will contact you prior to the start of work with an estimate of repair cost. All repairs are warranted for 90 days.

Customer Service

Ioline Corporation is committed to providing quality service and support to our customers. If you need assistance with an Ioline product, contact your local dealer or Ioline authorized service center. You may also contact:

Ioline Customer Service Department
Monday through Friday
7:00 A.M. - 5:00 P.M. U.S. Pacific Time
Voice: 1.425.398.8282
Fax: 1.425.398.8383
support@ioline.com
www.ioline.com

Your Comments Are Requested

Ioline Corporation is interested in comments on our documentation and products. Please send corrections or suggestions to:

Ioline Corporation
14140 NE 200th Street
Woodinville, WA 98072 USA
Voice: 1.425.398.8282
Fax: 1.425.398.8383
info@ioline.com
www.ioline.com

This ***User Guide*** is provided for informational purposes only. The contents are subject to change without notice, and Ioline Corporation assumes no responsibility for any errors that are contained herein. No part of the 300 or 350HF Systems ***User Guide*** may be copied, disseminated, or distributed without the express written consent of Ioline Corporation.

Before you contact Support…

Please gather the following information about your printer before contacting Ioline or your dealer for technical support:

Name:	
Company Name:	
Phone Number:	
Fax:	
E-mail:	
Model:	
Serial Number*:	
Date of purchase:	
Dealer:	
Type of media & ink used:	
Type of Computer:	
Type of design software:	
New software or peripherals:	
Service history:	

The FCC Wants You to Know...

This equipment generates and uses radio frequency energy and, if not installed and used properly (in strict accordance with manufacturer instructions), it may cause interference to radio and television reception. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. If this equipment does cause interference to radio or television reception - which can be determined by turning the equipment off and on - you are encouraged to try to correct the problem by one or more of the following measures:

- Use only shielded interface cables.
- Reorient the receiving antenna.
- Relocate the host computer with respect to the receiver.
- Move the host computer away from the receiver.
- Plug the host computer into a different outlet so that the host computer and receiver are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions. ***How To Identify and Resolve Radio-TV Interference Problems,*** a booklet published by the Federal Communications Commission, is a helpful reference. Please contact the FCC to request a copy:

www.fcc.gov

Document stock number: 004-000-00345-4

This booklet is available from:

U.S. Government Printing Office

Washington, D.C. 20402

Glossary

A

Acceleration - The rate that a cutter changes the velocity of the carriage or Table. Acceleration is measured in units of g (1 g = 32.2 ft/s2). Higher acceleration can increase throughput but may degrade cut quality.

Arc - A segment of a circle, also called a curve.

Axis - The geometric guidelines used to place a coordinate. Used to determine pen or blade paths for cutters.

B

Blade - Refers to the carbide steel cutting tool used by cutters. Blades are specified by offset (tip distance from center) and angle (relative to Table). They are designed to work with many different materials.

Blade Bevel - Angle of the vertical cutting edge of a blade. Larger angles help the blade travel through thicker material that produce more drag between the blade and the medium.

Blade Offset - The distance the blade tip trails behind the center of the blade.

Blade Steering Arc - The arc followed by the center of the blade as it rotates around the (fixed) tip. This is used to align the blade in the direction of the next vector so no tearing occurs.

C

Control Panel - Panel on the right side of the machine where primary plotter functions are accessible. Also called the Keypad.

Coordinate - A point that can be referenced by its position on the X or Y axes of a cutter. The use of line or arc segments to connect coordinates creates paths for pens and knives to follow when cutting.

Cut Sheet - A single piece of material that is loaded into the cutter.

D

DM/PL - Programming instructions language used to connect a cutter with a computer. DM/PL is used in the plotter drivers of some design programs.

F

File Name Extensions - In MS-DOS-® and Windows-® based programs, the three letters after the period in a file name. In cut files, the three letters denote a file type, such as the vector and bitmap-based Encapsulated Postscript (EPS) and the vector-based Hewlett Packard Graphics Language (PLT).

Flange - The projecting rim around the edge that holds the pen or blade holder to the tool carriage. The cutter automatically recognizes when a pen or blade is installed and changes cutting parameters accordingly.

Font - Refers to the style and width of a particular design of letters, numbers, and symbols, such as Helvetica Bold or Times Roman.

Force - In cutting, the downward pressure exerted on a pen or blade tip to ease cutting through materials. Additional force can be added by adjusting the Control Center Force settings and updating the cutter. Increasing the force will darken pen lines or aid in cutting thicker materials like tag board.

H

HP/GL Setting - The cutter supports three industry standard cutter languages: HPGL 7475, HPGL 7596, and DM/PL. Most design software uses DM/PL or HPGL 7475 which have a lower left origin. DM/PL cannot be selected in the Control Center because the cutter will automatically recognize it. HPGL 7596 uses a center origin so cutting begins at the center of the intended cutting area.

K

Keypad - Panel on the right side of the machine where primary plotter functions are accessible. Also called the Control Panel.

M

Mil - Thousandths of an inch or milliinches. For example; 75 mils is the same as .075 inches. 1 mil is equal to .025mm

Minimum Angle - This is the minimum angle for which the machine will perform a blade steering arc.

O

Offset - The distance the tip of the blade trails behind the center of the blade.

Origin - Place marking the zero (0) coordinate on the X or Y axes. Used as a starting reference by cutters for pen or blade paths.

Overcut - Distance the blade travels beyond the end of each cut vector.

Overlap - Amount of material cut in one panel (or tile) that duplicates what is done in the previous panel (or tile). The overlapped image allows for alignment when assembling and installing a large image.

P

Panel - Production area of a cutter. Cutters have a size limit along the Y axis (a few inches less than the width of the cutter) and the X axis. If a job exceeds the production area, consecutive panels must be set up by the design software. Also called tiling. Paneling a long cut will increase accuracy.

Plotter - A device that uses coordinates and vectors to create images. In electronic cutting, plotters recreate vectors on material with a set of coordinates stored in a computer file.

R

Resolution - The smallest distance that a cutter can move the material or the carriage. Plotter resolution affects the accuracy that a plot file is reproduced on the material.

S

Serial Communications - Method of sending information from a computer to a cutter by sending 1 bit at a time through a cable. The serial port on a PC is a male (small pins) connector.

Stencil - A thin sheet of material into which a design is cut. When a stencil is placed on another substrate and paint or ink is applied, the image represented by the cut out portion of the stencil is printed on the substrate below it.

T

Tag Board - A heavy paper (usually 150 pound) that is used in the apparel industry for cutting patterns and stencils.

Throughput - The speed at which a cutter completes a job. Represents the ability to process information and produce an image.

V

Vector - In computerized cutting, a line segment between two coordinates, on which a pen or blade path can be created for cutting.

W

Weeding - Process of pulling extraneous material away from a cut design leaving only the sections representing the intended design.

X

X-Axis - Theoretical horizontal line providing a lengthwise reference point for cutters. Associated with Table movement on the cutter.

Y

Y-Axis - Theoretical vertical line providing a longitudinal reference point for cutters. Associated with carriage movement on the cutter.

INDEX

Symbols

.10o 21

.DAT 21

.EXP 21

.EXT 21

301 Software 21, 23

A

Acceleration 29, 33, 42, 61

Accessory Kit 23

Acrobat® Reader 23

Adhesive Sheet xvi

Adobe® Illustrator® 21

Appiqué 21

Arc 61

Arrow keys xv, 25, 26, 27, 37, 41, 43

Assembly 23

Axis 61

B

Barudan 21

Belt "T" Connector xix

Belt Tensioner Assembly xviii

Blade 61
- Bevel 61
- Installing 38
- Type 42

Blade exposure 27, 39, 40
- Adjusting 39

Blade holder xiii, xix, xx, 32, 38, 50
- Cleaning 50
- Foot xx
- Installing 38
- Thumb Screw xix

Blade Jaw xix

Blade offset 27, 30, 33, 61

Blade Overcut 30
- Default setting 30

Blade Removal Pin xx

Blade Steering Arc xii, 30, 61

Buffer size 27

C

Calibration xii, 33, 34

Cancel 41

Carriage xvi

Carriage PCB xix

Carriage Ribbon Cable Connection xviii

Carriage wheels 49

Cleaning procedures 49–50

Communication
- Computer Port Test 34
- Plotter Port Test 34
- Serial 23, 31, 34, 46, 53, 62
- Serial Test 34
- Testing 46
- USB xvi, 23

COM port xx, 32, 46, 47

Computer 59

Computer Port Test 34

Control Center x, xii, xiii, 21, 23, 25, 26, 27, 28, 29, 30, 31, 33, 35, 37, 39, 40, 41, 46, 47, 54, 55, 61
- Diagnostic tests 28, 46
- Main Menu 28
- Menu Bar 29, 31
  - About 35
  - Blade Holder Status 32
  - Calibrate Plotter 34
  - Calibration 34
  - Com Port Setup 32
  - Computer Port Test 34
  - Contents 35
  - Display 32
  - Exit 31
  - Factory Defaults 32

File 31
Filtering 33
Help 35
HP/GL Setting... 33
Memory Buffer 32
Motor Voltage 32
Open Settings File 31
Options 33
Plotter Port Test 34
Plotter Settings 32
Plotter Setup 32
ROM Version 32
Save Settings As... 31
Send Cut/Plot File 31
Serial Test 34
Setup 31
Test 34
Screen Menu xii, 29, 31
Screen Menu options 29–30
Acceleration 29
Blade Offset 30
Blade Overcut 30
Blade Steering Arc 30
Force 30
Measurement Units 29
Minimum Angle 30
Panel Size 29
Scale 29
Send Settings to Cutter: Permanent 29
Send Settings to Cutter: Temporary 29
Up/Down Delays 30
Update Display 29
Send Settings 29
Setup Screen x, 28

Control panel 61. *See also* **Keypad**

Cooling fan xix

Coordinate 61

CorelDRAW!® 21, 26

Customer Service 57, 58
Contact information 58

Cut Sheet 61

Cutter functions 25–36

Cutting xii, 26, 27, 37–46
Cancel 41
Loading the Material 37
Pause 41
Repeat 27
Suggested settings 42

D

Design software 21, 28, 41, 53, 54, 59, 61, 62

Diagnostic tests 28, 46

Digitizing software. *See* **301 Software**

Disassembly procedures 50–52

DM/PL 61

Dongle. *See* **Hardlock key**

Drive belt xvii

Drivers 21

Dust cover xvi

E

Embroidery software 21, 28

F

Fan Connectors xviii

FCC 60

File formats 21

Firmware xii, 33, 55
Install new 33

Force xii, xiii, 26, 27, 29, 30, 39, 40, 42, 61
Adjusting 39–40
Default settings 30

G

Getting started 21
Connecting to computer 23

H

Hardlock key 23

Help 57
Ioline Support 57

HP/GL 33, 61

I

Illustrator® 21

Interference problems 60

Ioline Corporation 58

J

Jaw Flange xx

K

Key. *See* **USB key**

Keypad xii, xvi, xviii, 25, 61
Arrow keys 25
Controls 25–27

Keypad Assembly xviii

Keypad Connection xviii

Kiss-cutting xiii, 43–45

L

Left end cover xvi

Left end plate xviii

Leg xvi

Logic board x, xvii, xviii, 55

M

Main Voice-coil xix

Material 42
Thickness 42

Measurement Units 29

Media 59

Melco 21

Minimum Angle 30, 62

Motor assembly xvii

O

Offline 25

Offset 62

Origin x, xii, xvi, 26, 27, 33, 40, 41, 43, 53, 62
Lower left location 26
Origin point 26

Overcut 27, 30, 62

Overlap 62

P

Packing List 23

Panel 62

Panel Size 29

Parallel port connection xviii

Pause xiii, 41

Plotter Port Test 34

Plotter settings 21

Port conflicts 28

Power connector xvi

Power supply xvii

Power supply connection xviii

Power switch xvi

Programmable ROM xviii

R

Radio frequency 60

Rear assembly panel xvii

Repair 57, 58
Factory authorization xv

Repair and Maintenance 49–56

Repeat 27

Resolution 62

Return Material Authorization (RMA) 57

Right end cover xvi

Right End Plate xviii

RS-232 (COM port) xx, 55

S

Safety 52

Safety & cautions xv, 23

Scale 29

Sending a cut/plot file 40

Send Settings to Cutter
Permanent 29
Temporary 29

Serial cable receptacle xx

Serial communications 62

Serial connection xviii

Serial number plate xvii

Serial port xvi
Faulty 46, 47

Serial Test 34

Service 57
Under warranty 57

Service & support 57

Servo motor connection xviii

Set Origin xii, 26, 27, 33, 40, 41, 43, 53

Sew disks 21

Shipping screw xvii

Software. *See* **301 Software, Control Center or Embroidery software**
Apparel design software 21, 59
Control Center 21

Speed xii, xiii, 26, 39, 42

Start/Stop 25, 26, 27, 28, 37, 39, 41, 45, 46, 53

START Mode 25

STOP Mode 25

Suggested settings 42

Support 57, 57–60
Contact information 58
Ioline Web site 57
Warranty 57

System settings xii, 28

T

Table xvi

Table assembly xvii

Tajima 21

Tech Support 57, 58

Test cut xii, 27, 29, 39, 40, 46
Repeat 27

Throughput 62

Thumb nuts xvi

Top spring wheel xix

Top traverse wheel xix

Top wheel lock xix

Toyota 21

Traverse xiii, xix, 49

Traverse wheel xix

Tray xvi, xix

Tray assembly xix

Tray strip xvii

Troubleshooting 53–55
301 Software errors 54
Common problems 53
Control Center software errors 54
Error messages 54
L.E.D codes 55
Radio-TV interference 60

U

Up/Down Delays 30

Update Display 27, 28, 29

USB port xvi, 23

User Guide viii

V

Vector 62

Voice-coil Wires xix

W

Warranty 57

Weeding 62

X

X-Axis 62

X-Axis Motor ENC xviii

X-Axis transmission xviii

Y

Y-Axis 62

Y-Axis motor ENC xviii

Y-Axis transmission xviii